TEXTILE READER'S GUIDE

Classification of Contents

Fibers 1243
Yarn Production 1244
Fabric Production 1248
Standard Finishing 1251
Dyeing and Printing 1251
Special Finishing 1253
Testing and Measurement 1256
Textile Mills 1259
Chemistry and Physics 1263
Textile Education and Research 1266
Index to Authors ..... Last Page

TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A.

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(An explanation of the classification used in the DIGEST was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors.)

Subscriptions are available to Non-members of the Institute. The rate is $25.00 per year.

Advertising rates are available upon request.

Abstracts

FIBERS A

Artificial Fibers A 2

Collagen fibers

John H. Highberger (United Shoe Machinery Corp.) ; U. S. P. 2,631,942 (March 17, 1953).

A process of producing collagen fibers comprises addition of mucoprotein from blood to an aqueous solution of an acid-soluble collagen and precipitating the product by dialysis against water.

Quality yarns from the blends

Jim McComb. *Modern Textiles Magazine 34*, 38, 87, 88 (April, 1953).

See front section.

Skin effect in crimped rayon

W. A. Sisson and F. F. Morehead. *Textile Res. J. 23*, 152-57 (March, 1953).

Crimped rayon staple fibers are shown to have an unbalanced skin structure resulting from an asymmetrical distribution of skin around the core. Three general types of unbalanced cross sections, possible mechanisms for producing various types of unbalance, and conditions necessary for building crimp into a fiber are briefly described.

Stripping color from fibers

M. J. Reider. *American Dyestuff Reporter 42*, P 190-205 (March 30, 1953).

A series of experiments on the stripping of color from textiles made from such hydrophobic fibers as nylon, acetate, "Orlon", "Dacron", "Acrilan", dynel, X-51 and "Saran" are described and the results are evaluated from the following standpoints: (1) Amount of color removed. (2) Effect of stripping on redyeing. (3) Effect of stripping on tensile strength. (4) Effect of stripping on light fastness.

Use of synthetics growing in apparel blends

Anon. *Tex. Age 17*, 36-40 (March, 1953).

Article is a special review of the versatility of Dynel, Union Carbide and Carbon's new staple acrylic fiber. Some of the advantages mentioned are blending properties, fire resistance, desirable hand and wrinkle resistance.

YARN PRODUCTION B

Fiber Preparation B 1

Material handing apparatus

Camiel de Brabander (American Viscose Corp.); U. S. P. 2,618,395 (November 18, 1952).

Apparatus for handling materials comprises a storage bin, means for feeding and withdrawing material to and from the bin, and electrical means for controlling the operation of the withdrawing means independently of the feeding means.

Opener utilizes principles of Shirley Analyzer

Anon. *Tex. Ind. 117*, 115-6 (April, 1953).

A cotton opener that will clean stock as effectively as if it were processed through four conventional beaters has been developed at the Shirley Institute in England and will be produced by Tweedales & Smalley. The machine is related to the Shirley Analyzer and is, in fact, a development of the principles of this machine. Mill trials show (1) A short sequence of machines utilizing the Shirley Opener is as effective in cleaning as, and more effective in opening than, a much longer line of conventional machinery; (2) No more maintenance and attention required than for conventional machines; (3) It is not sensitive to changes in temperature and humidity; (4) Advantages are evident as less card waste, less dirt on roller beams, and increased card life; (5) no adverse effect on yarn appearance.

Staple fiber cutter

Dan B. Wicker (American Viscose Corp.); U. S. P. 2,631,668 (March 17, 1953).

A staple fiber cutting device comprises a rotatable member with a cutter edge, a fixed apertured shear member to be engaged by the cutter edge, and means for guiding material to be cut through the aperture into the path of the cutter.

Staple fiber cutter

Wm. R. Schmitz, Jr., U. S. P. 2,631,667 (March 17, 1953).

A filamentary material cutter comprises a rotatable disc member, a shear member projecting from its periphery, a radial channel for the filamentary material within the disc member which extends through the shear member and a cutting member for cutting filamentary material issuing from the shear member.

Carding and Combing B 2

Can conversion at Avondale costs only $11.25 per card

Thomas B. Winston. *Textile World 103*, 97, 182, 184 (March, 1953).

See front section.

Study of neps proved beneficial to mills

Anon. *Tex. Age 17*, 64-65 (March, 1953).

Ten mills having a total of about 350,000 spindles have reported increases in carding production averaging 55 per cent, reductions in the number of neps produced, and, in some cases, better yarn quality, as the result of applying the research findings of a study on causes and reduction of neps carried on at N. C. State College. Tables of the specific results from the ten mills are included in the article.

Spinning B 4

Anti-balloon device

Lambertus te Strake, U. S. P. 2,620,998 (December 9, 1952).

A yarn anti-balloon device for paying-off bobbins of creels comprises a guiding member arranged concentrically around the axis of the bobbin which has a thread eye for removal of thread therefrom and a shield adapted to exert a braking action on the thread.

Cord belt

Dale L. Waugh (The Dayton Rubber Co.); U. S. P. 2,631,463 (March 17, 1953).

A V-type rubber belt includes longitudinally extending cords composed of glass fibers intermingled and twisted together with threads of rayon fibers.

Double-twist spindle

(Doutors Societe Ananyme Holding) B. P. 688,029 (February 25, 1953).

A double-twist spindle comprises a member having a surface exterior of the yarn which rotates with the spindle shaft to confine the yarn from its exit from the shaft to a point adjacent a stationary yarn guide.

False Twister

Otto W. Schlums (Whitin Machine Works); U. S. P. 2,620,519 (December 9, 1952).

A false twister comprises grooved opposed disc members with their proximate faces arranged in substantially vertical converging planes with the peripheries of the discs oppositely coned,

wherein the discs are driven by driving rolls contacting the disc peripheries.

Flat vs round bobbins

A. Gasser. *Melliand Textilber. 34,* 123-25 (April, 1953) ; *in German.*

The author reports on the results of scientific test series, which indicates that the tension to which yarn is subjected when being drawn off from flat bobbins is more favorable than in the case of round bobbins. Flat bobbins contain almost twice as much yarn as round bobbins of the same depth of winding; their total weight is not very much higher, and they have a lower-lying centre of equilibrium.

New direct spinner

Anon. *Modern Textile Magazine 36,* 44 (April, 1953).

See front section.

The mill of today

Robert Z. Walker. *Textile Bulletin 79,* (March, 1953).

The point which is being stressed here is the fact that the traveler, while able to function to complete satisfaction presents a critical problem which deserves intensive thought and attention. As it operates by violating many theoretical principles, it is obvious that it requires all the help that can be given to it by matching the particular traveler to the conditions under which it is operating and in preventing any abuse of either the traveler or the ring.

The development of ring spinning has proven to be one of the greatest advances in the art of spinning, and is the most important contribution ever made by Americans to the textile industry. The invention of the ring traveler is attributed to John Thorp, who was born in 1784 in Massachusetts. The exact date of Thorp's invention is not too clearly established, as the record of his patent was accidentally uncovered in 1924-1925 during an entirely different investigation being conducted in the Patent Office. There were several patents attributed to Thorp during the period from 1812 to 1844. His most important patent was granted to him on Nov. 20, 1928, and became the basis for the development of the ring traveler method of spinning in use today.

John Thorp's invention was enlarged upon and developed by Nathan P. Hicks of Rhode Island. His development was important in that he carried out exhaustive research and determined that the weight of the traveler was dependent upon the count of the yarn being spun.

Winding and Spooling B 5

Modern winding methods and machines

H. Marsden. *Textile Manufacturer 78,* (February, 1952).

Winding covers all the operations for transferring all types of yarns from spinning packages to packages suitable for the final yarn processes of textile manufacture, and this paper emphasises current developments in methods and machines.

Tensioning device

Rudolph S. Bley (North American Rayon Corp.) ; U. S. P. 2,620,617 (December 9, 1952).

A yarn tensioning device comprises a recess and an aperature magnet positioned below wherein a movable member of magnetic material fits loosely in the recess so that the magnetic attraction on the movable member tends to brake the yarn.

Winding machine

Raymond V. Tata (Universal Winding Co.) ; U. S. P. 2,631,787 (March 17, 1953).

The invention provides a device for attachment to or incorporation with a winding machine so that a "transfer tail" or "tail end" may be wound on the end of the package core before the winding of the actual package commences.

Yarn winding apparatus

Albert W. Keight (Celanese Corp. of America) ; U. S. P. 2,630,976 (March 10, 1953).

The invention provides a yarn winding apparatus which produces a yarn package having a uniform twist both in the ends of the yarn and in the yarn forming the body of the package and which produces a yarn package having a transfer tail of twisted yarn.

Yarn processing B 6

Vacuum extractor controls

R. J. Tucker. *Tex. Ind. 117,* 159 (April, 1953).

Article describes a typical set-up of vacuum extractors for removing excess water after bean dyeing. Pertinent points about the Cycloidal and Hytor vacuum pumps are included, and controls and operation are discussed.

Yarn Application B 9

Drying apparatus

Victor G. Forzley and Mario Sonnino (Ameri-

can Cyanamid); U. S. P. 2,622,182 (December 16, 1952).

Apparatus for drying yarn comprises a pair of rotatable yarn advancing hollow rolls wherein a hollow shaft within each of the rolls is fitted with an electrical heating unit.

Short-cut tow to top process

Staff. *Tex. Ind. 117,* 128-131 (April, 1953).

Article describes a new tow-to-top machine which is designed to convert continuous filament to staple fiber by the Perlok system and crimp the resulting sliver in one continuous operation. Operation gives about 30 doublings, 100 Grains per yard are fed and 30 grains per yard delivered. Expected production is about 75 lbs/hr. Use of a tearing action gives random distribution of staple, which should enhance yarn properties.

Textile treatment

Donald Finlayson and Maitland W. Alford (Celanese Corp. of America); U. S. P. 2,622,961 (December 23, 1952).

Gaseous treatment of filamentary textile material at supersonic and subsonic gas velocities.

Yarn Testing and Numbering B 10

Making Dynel yarn on worsted systems

J. H. Purse, H. L. Pero. and W. W. Rankin. *Tex. Ind. 117,* 147-153 (April, 1953).

Article gives rather complete data on procedures used to process Dynel staple, both dyed and undyed, into yarns on the worsted system. The section headings are: Dynel Top Making from Undyed Staple; The Production of Dyed Dynel Top; and, Drawing and Spinning Dynel Worsted Yarns.

FABRIC PRODUCTION C

Yarn Preparation C 1

English Size box arrangement may end warp sizing worries

Anon. *Amer. Tex. Reporter 67,* 11-13, 42 (February 12, 1953).

Article is a description of the Shirley automatic size box, manufactured by Joseph Hibbert & Co., Ltd., Darwen, England. This apparatus is claimed to maintain the percent size take-up of the warp constant from beam to beam and day to day. It also allows for variations in viscosity, take-up characteristics of the warm and mechanical conditions. Illustrations and a complete explanation of the machine and operating procedure are included.

Preparing warp yarn for weaving

T. Hargreaves. *Tex. Ind. 117,* 164-173 (April, 1953).

Loom efficiency is governed by the preparation of warp yarn in winding, slashing, and dyeing. This article reviews the causes and remedies for some of the more common difficulties encountered, with emphasis on the warping operation.

Weaving C 2

Design fabrics for end-uses AATT symposium advocates

Anon. *Amer. Tex. Reporter 67,* 15-17 (February 12, 1953).

Article is a summary of speeches given before the American Association of Textile Technologists at New York City. The trend in synthetic production, the application of sound engineering practices, the development of fabrics with the end use in mind, and other problems arising from the processing of synthetics were discussed.

What humidity to run in weaving?

Staff. *Tex. Ind. 117,* 154-55 (April, 1953).

Article states that lower weave-room humidity is desirable from standpoint of worker comfort and less deterioration of leather and metal parts. Results of a limited test by one mill shows that work runs bat at either high or low humidities, and the best figure seemed to be about 78% rh.

Special fabrics C 4

Decorative tissues

Alvin W. Boese (Minnesota Mining and Mfr. Co.); U. S. P. 2,620,853 (December 9, 1952).

In making decorative tissue sheeting, the invention provides simultaneously carding a combination of free textile fibers and decorative flexforming sheet material which produces scattered decorative flecks within a single carded fiber web.

Laminated sheet material

Benjamin Messing, U. S. P. 2,621,139 (December 9, 1952).

A method of making a continuous padded laminated material comprises placing a layer of padding between two flexible sheets, one of which is a thermoplastic sheet and then applying heat and pressure thereto until the three layers are fused together.

Rubber transmission belt uses an all-rayon fabric

Anon. *Tex. Age 17*, 25 (March, 1953).

A new rubber transmission belt, said to be the first ever made with all-rayon fabric, is claimed to be 25% stronger and possess ten times greater flex life than other belts with the same number of plies. Tests are said to show the new belt to have 50% less stretch than cotton fabric belts.

Technological development of industrial fabrics

Anon. *Tex. Age 17*, 26-31 (March, 1953).

In a talk before a special forum sponsored by the American Association of Textile Technologists, Herbert R. Schwarz, of Wellington Sears Co., outlines some of the considerations in designing a new industrial fabric. Type of yarn, construction of fabric, type of fiber, and pilot plant evaluation are a few of the items discussed.

Textile fabric

Chas. E. Neisler, Jr. (Neisler Mills, Inc.); U. S. P. 2,632,320 (March 24, 1953).

A woven pre-shrunk fabric comprises warp and weft interwoven, substantially non-shrunk, puckered threads and shrunk threads formed from spun rayon wherein the shrunk threads hold the adjacent other threads puckered.

Tufted material

Albert E. Caldwell. U. S. P. 2,633,442 (March 31, 1953).

A method of making a tufted sheet comprises placing thermoplastic sheets over spaced heating elements, inserting sheet separators therebetween, applying pressure to seal the sheets between the separated portions, removing the separators, and heat sealing again along lines intersecting the seals.

Yarn and fabric construction

Arnold W. Schmidt and John P. Malik (The George W. Borg Corp.); U. S. P. 2,630,619 (March 10, 1953).

A pile fabric is produced by carding a sliver of synthetic fiber staple, knitting a base fabric while feeding the sliver to the needles of the knitting machine to form a pile on the base fabric, and pressing an adhesive through the base fabric.

Inspection and Testing C 5

Device automatically marks defects in finished fabrics

Anon. *Tex. Ind. 117*, 115 (April, 1953).

Article describes a device now available which automatically marks defects while the inspection machine is running. When a weaving, dyeing, printing, etc., defect is detected by the inspector, she presses a button on the apparatus which in turn automatically bonds a colored string to the selvage to show location of the fault.

Tar Spots! Where will the axe fall?

Anon. *Tex. Ind. 117*, 131 (April, 1953).

Although tar spot sources have been located and brought to the attention of those who can help eliminate them, very little progress has been made toward cooperation to reduce them. Article summarizes sources and action taken by various organizations who are responsible for the spots.

STANDARD FINISHING D

Cold spring bleachery

Anon. *Tex. Age 17*, 6-14 (March, 1953).

Better machinery arrangement and the installation of some new machinery has allowed a 100% increase in production at the Cold Spring Bleachery at Yardley, Pa. The expenditure of $800,000 on new equipment, building expansion and realignment of machinery over a period of five years has increased production to almost 1,000,000 yards a week. A better electric power distribution system, an improved steam plant, increased speeds, and installation of electric controls all contribute to the increased production, although the labor force has been reduced.

Future of cloth finishing

Anon. *Wool Review 26*, 47-49 (January, 1953).

See front section.

Sulfuric acid recovery

D. B. Wicker and J. W. Conwell (American Viscose Corp.); U. S. P. 631,973-4 (March 17, 1953).

Methods for recovering sulfuric acid comprise introducing a lead and a lead peroxide electrode into an acid salt solution to deposit lead sulfate thereon and subsequently impressing a direct current on the electrodes while suspended in an aqueous medium to liberate the ions.

DYEING AND PRINTING E

Gas-fading of dyed shades

J. Eisele and W. Federkiel. *Melliand Textilber. 34*, 145-7 (April, 1953); *in German.*

Some interesting aspects are discussed of the

problems caused by the fact that dyestuffs and shades dyed therewith are affected by burnt gases, and deals in particular with shades dyed on acetate rayon, which absorbs burnt gases (NO, NO_2, N_2O_3). Attempts have been made to remove this sensitivity, for instance by addition of inhibitors. The gas-fading of shades dyed on other fibrous materials such as wool, silk, and synthetics is also mentioned. The author describes in detail test methods which can be used in practice to determine the resistance of dyestuffs and dyed shades against gas-fading.

High temperature dyeing unit

Fred F. Jacobs. *American Dyestuff Reporter 42,* P 175-6 (April, 1953).

The Ciba High Temperature Dyeing Unit for the determination of laboratory formulations for matching shades is described. The unit is essentially an autoclave which in addition to the usual safety valve and pressure gage is also equipped with two thermometers, one for indicating the actual temp. of the dyebath. Within the unit a number of removable dye beakers are mounted on a frame and into each breaker is inserted a stainless steel rod which agitates the dyebaths. Pictures of the apparatus are included.

Promoting level dyeing operations

F. O. Stone. *Textile Bulletin 79,* 90 (March, 1953).

The direct colors were the first group of coal tar dyes developed into a full range of colors for dyeing cotton though possessing only a moderate degree of fastness to light, washing, perspiration, etc. Then other types of colors possessing a higher fastness rating were discovered and manufactured; these being the sulfurs, vats and naphthols. The dyestuff makers discontinued further development of the direct range of dyestuff until the 1920s and 1930s. Improved classes of direct dyes were then developed (dyeing as direct color then diazotizing and developing with developers such as beta naphthol, etc.) This group gave improved wash fastness with moderate light fastness. The trend has been to develop faster to light colors and simple types of after-treatable direct dyes that gave both improved fastness to washing and light. Some of these dyes were classed under fast-to-light types (Benzo Fast later called Fastusols, Solantine, Chlorantine, Solephenyl, Superlitefast). The after-treatment group of direct colors included the formaldehyde and copper compounds such as Cuprofix types (Sandoz 6).

Acetate dyes as used in the dyeing of acetate

and nylon are known as direct dyeing colors and may be classified under direct dyeing and the diazo and developed groups. The direct dyeing acetate dyes are insoluble pigment type of dyes distinctly different from the direct dyes which actually dissolve and from that solution exhaust themselves onto cellulosic fibers whereas the direct dyeing acetate dyes react and combine on and into the cellulose acetate and nylon fibers and fabrics.

Suggestions for vat dyeing on packages

Anon. *Tex. Ind. 117,* 178 (April, 1953).

For most satisfactory results in vat dyeing, the dyestuffs should (1) be clean and well dispersed; (2) have good level dyeing properties; (3) check with each successive dyeing; (4) have the same working properties as the other dyes in the combination. Article is an abstract of a paper by Ernest L. Caswell of Ciba Co., Inc., before Southeastern Section, AATCC, in Talladega, Ala., in which the above subjects were discussed.

Wash fastness

Casella Farbwerke Mainkur. *Brit. Rayon and Silk J. 29,* 78 (February, 1953); B. P. 683,251 (October 26, 1952).

A process is described which is applicable to regenerated cellulose fibers dyed with those dyes that are brought on to the fiber in a water-soluble form but are there rendered less soluble in water by oxidation or within certain azo dyes that are there rendered less soluble by diazotising and coupling to increase their molecular complexity. The process consists of after-treating the dyed material in a separate cold bath or a bath which is being used for afterrinsing or other simple treatment to which has been added a small amount of a peralkylation product or a polymerizate of an alkylene imine.

SPECIAL FINISHING F

Abrasion resistant resins

Geo. M. Moisson. *Textile World 103,* 76, 132 (April, 1953).

A new process developed by the Aquex Development and Sales Corporation consists of applying a chelated vinyl acetate copolymer complex and a complex copper-resin compound to direct-dyed rayon fabrics. The fabric thus treated is completely washable. Excellent dimensional stability, color-fastness, light fastness, and retention of physical properties (tensile strength and flex abrasion resistance) are said to result from the use of this process.

Contribution to the utilization of sulphite waste liquor

Theodor Kleinert. *Das Papier 7*, 82-7 (April, 1953); *in German.*

The precipitation of sulphite waste liquor with lime is investigated in detail, and conditions for a technical process are established. Conversion of the precipitates into fertilizers and means of soil improvement is proposed.

Crease resistance of fabrics

I. S. Margolin. *Faserforsch u. Textiltech. 3*, No. 11, 459-60 (1952), *in German; Brit. Cotton Ind. Res. Assoc. 33*, 182 (April, 1953).

A method is described whereby the crease-resistance of a fabric is determined from the change in the maximum bredth of a loop of a given length of fabric after subjecting the loop to compression under a known weight for a given time, a suitable time for recovery being allowed after removal of the load.

Fabric stabilization process features infra-sonic impacts

Anon. *Tex. Age 17*, 58 (March, 1953).

A new development in shrinkage control known as the Hatay textile stabilization process operating on mechanical principles using infra-sonic impacts with the need for added chemicals has been reported in the trade. Knitted cotton wear, woven fabrics, and synthetics have been controlled to acceptable commercial degreed of residual shrinkage by this finishing process, and it is claimed that absorptivity and "hand" have been improved in the treatment. Essentials of the new process are: 1) treatment of the fabric while from tension, 2) close control of moisture content of fabric, and 3) imposition of infra-sonic impacts applied all over the fabric at small areas of contact.

Fabric treatment

Baldewijn Steverlynck (Groeninghe Ververij P. V. B. A.); U. S. P. 2,633,009 (March 31, 1953).

Apparatus for the treating of textile materials at elevated temperatures.

Fabric treatment

Jos. C. King (Fairforest Co.); U. S. P. 2,633,-446 (March 31, 1953).

To render yarn and fabrics impentrable by Trichophyton interdigitale (athlete's foot), they are subjected to a solution containing lauryl pyridinium salt of 5-chloro-2-mercapto benzo thiazole, and then heated to set the salt.

Liquid treating web material

Edward P. Mullen, U. S. P. 2,620,544 (December 9, 1952).

An apparatus for treating web material comprises a tenter frame and traveling the material under tension with means for applying liquid on one side of the web and means for collecting the liquid on the other side and reapplying it to the web.

Polyesters for coating and impregnating

Anon. *Skinner's Silk and Rayon Record 27*, 314; B. P. 684,400, I. C. I. Ltd. (April, 1953).

Polyesters are described which are suitable for coating fabrics to give a smooth flexible, glossy surface, for binding two or more layers of fabric together to yield a lamenated material and for binding loose fibers together to form non-woven fabrics. The polyester is prepared by condensing a glycol or ester of a glycol with a mixture of aliphatic or aromatic dicarboxylic acids. It is then modified by adding a polyisocyanate to its solution in an anhydrous organic solvent and then heating the mixture at 100°C. In the reaction the isocyanate reacts with free hydroxyl groups in the polyester forming a number of amide linkages.

Shrink proofing wool

Albert Landolt (Ciba Ltd.); U. S. P. 2,632,717 (March 24, 1953).

A process for improving the resistance of wool to felting and shrinking comprises immersing the wool in an acid bath at a pH of 2.5 to 4 at 20°C. wherein the bath contains a melamine and formaldehyde condensation product.

Stabilizers for vinyl chloride fibers

Anon. *Skinner's Silk and Rayon Record 27*, 314; B. P. 684,499 (April, 1953).

A new group of stabilizing agents has been discovered—it comprises alkali-earth metal salts of branched or substituted chain aliphatic carboxylic acids, containing 4 to 16 carbon atoms, the alpha carbon atom being free of a directly attached aryl group. It is claimed that the addition of less than 10% and preferably 0.5 to 6.0% of such a substance to fibers and films can almost entirely prevent color formation even during prolonged exposures to heat and light. The recommended salts are the calcium, bariu mand strontium salts of aliphatic carboxylic acids.

Synthetic resins for rubber bonding

A. H. Gentle and T. Jackson (British Celanese); B. P. 680,339 (October 1, 1952); *Brit.*

Rayon and Silk J. 29, 76 (February, 1953).

A new pretreatment alternative to the gum-dip, for use with yarns and fabrics made from high tenacity filaments, makes use of a linear polymer free from alcoholic groups. The resin can be made by condensing 1 mole of phenol with 1 to 1.67 moles of acetaldehyde at the boil in the presence of an acid catalyst; or alternately by condensing 1 mole of furfural with 1 to 2 moles of resorcinol, but the latter is dark colored.

U. P. D. develops metallic insulating process

Anon. *Amer. Tex. Reporter 67,* 14 (February 12, 1953).

United Piece Dye Works has developed a metallic-insulating process applied directly to the back of outerwear fabrics. The new process, called Therma-Sec, combines insulating properties with water repellence, stain resistance, and wrinkle resistance.

Water repellency and fabric blends a problem to QM

Anon. *Tex. Age 17,* 58-9 (March, 1953).

Article consists of excerpts from an address by J. Fred Oesterling, of the Quartermaster Research & Development Laboratories before a meeting of the American Association of Textile Chemists and Colorists. In this address, the re-evaluation of water repellency and the problems confronting the mill in producing acceptable water repellent fabric are outlined.

Water-repellent finishes

Anon. National Lead Co., *Skinner's Silk and Rayon Record 27,* 318; B. P. 684,686 (April, 1953).

A two-stage treatment is described which involves the use of special zirconium compounds in conjunction with a salt of a metal selected from the Groups III, IV and VIII. The process consists of impregnating the fabric or other material with an aqueous solution of a zirconium compound, containing zirconium in a complex carbonato anion, a fatty acid compound, and optionally an emulsified wax, then further treating with an aqueous solution of the metal salt and then drying. A zirconium salt may be used in the second stage of treatment in place of the tin, iron or aluminum salt.

TESTING AND MEASUREMENT G

Instruments and Instrumentation G 2

A simple cotton fiber testing laboratory for mills

S. C. Mayne, Jr., Jim N. Little and Earl E. Berkley. *Textile Industries 117,* 122, 123, 124 (March, 1953).

See front section.

Applying tracer techniques in the textile industry

Wm. G. Chase. *Bull. Lowell Text. Inst.,* Series 55, No. 3, 3-11 (April, 1953); *Brit. Cotton Ind. Res. Assoc. 33,* 219 (March 31, 1953).

This paper outlines the theory of radioactive isotopes and their use as tracer elements. Atomic structure is briefly reviewed and an elementary treatment of radio-activity is presented. Tracers and tagged elements are defined and the types of uses to which they have been put are listed, with particular reference to textile applications. The problems incident to the choice of a tracer are discussed.

ASA to develop standards for institutional textile fabrics

Anon. *Tex. Age 17,* 25 (March, 1953).

The American Standards Association has been asked to initiate a project for the development of standards for the performance of institutional textile fabrics. The standards will define such requirements as tensile strength, colorfastness, washability, and other characteristics necessary for such articles as towels, hotel uniforms, upholstery and drapery material, table linen, work shirts, overalls and similar items.

Caustic bath density and level indicator

Staff. *Tex. Ind. 117,* 132-34 (April, 1953).

Article describes simple instrumentation and automatic controls capable of regulating caustic bath density and level which allow a degree of precision, economy and safety which is hard to achieve with manual controls. A cost analysis and description of instruments are given.

Characterization of cord fatigue in tires

K. R. Williams, J. W. Hannel and J. M. Swanson. *Ind. and Eng. Chem. 45,* 796-800 (April, 1953).

The laboratory fatigue testers currently in use fail to show a quantitative correlation with tire fleet tests. In the investigations reported here cords were removed from fatigued tires and studied to define the changes taking place as a result of fatigue. The principal effect was a progressive loss in strength removed from the flex zone, rue to breaking of filaments. A similar progressive loss in strength was duplicated in an "in-rubber" laboratory fatigue test and good agree-

ment was obtained with actual tire performance data on several types of cord. The new test procedure offers considerable promise as a tool for guiding research on cord fatigue.

Fourth cotton research clinic

Staff. *Tex. Ind. 117*, 160-163 (April, 1953).

Among the topics discussed at the Fourth Cotton Research Clinic at Savannah, Georgia, were 1) an instrument to measure fiber strength and elongation, 2) Correlation of gauge length with fiber and yarn strength, 3) New roving twist formula, 4) nep study 5) Early cleaning of cotton in processing, 6) the effect of trash on drafting, and 7) the effect of storage and gin drying temperature on the spinning quality of "Green" new crop cotton.

Micro-abrasion tester

P. Grodzinski. *Research 6*, 98-105 (March, 1953).

The experiences gained from a new abrasion tester designed to determine wear over a small volume of specimens are described. The results reveal the possibilities of micro-abrasion methods when intelligently applied to the testing materials. The author discusses the correlation of this method with other testing techniques.

Quality control and the research function

O. P. Bechwith. *Textile Res. J. 23*, 197-206 (March, 1953).

The author has attempted to show that the bonds of mutual interest between research and quality control are strong. The coordinative nature of quality control and its wide-spread area of interest in all phases of organization actively affecting quality is shown. The vital part which quality control should play in the critical process of translating the fruits of research into successful mass production is pointed out. The operation of quality control stems from the use of tested management principles—setting standards, checking conformance to standards, initiating corrective action, and planning improvement.

Statistical evaluation

Ulrich Graf. *Melliand Textilber, 34*, 37-8 (April, 1953) ; *in German.*

The author discusses a statistical testing method with the aid of which it can be determined whether the dispersion between the groups is compatible with the dispersion within the groups or not, i.e., whether homogeneous or heterogeneous material is used. In order to describe heterogeneous material two dispersion

values must be calculated. If these two values are known, it is possible to determine, even if heterogeneous material is to be tested, a confidence range for the average value. If the extent of this range is prescribed, a minimum number of groups must be tested. With the aid of the nomographs used by the author one can determine easily how many groups and how many individual values per group must be tested in order to find the average value with a desired accuracy.

Testing at the manufacturing level

P. L. D'Alessandro. *Textile Bulletin 79*, 79 (March, 1953).

With the advent of the new fibers the manufacturer is approaching a new outlook toward laboratory testing which will make this type of work of inestimable value to the manufacturers, in spite of the shortcomings of some tests. This new outlook towards testing by the manufacturer has been necessary, in order to satisfactorily meet the many fabric eveluation problems arising from the use of these new fibers that are no longer regarded as adulterants, and are now recognized as conferring new and valuable fabric properties. The new fibers, therefore, are bringing about a radical change in the manufacturer's concept of textile testing as it pertains to fabric development. At present, he has become as equally concerned about testing basic fabric properties, as he has always been concerned about testing his raw materials at the mill.

At the mill or production level of testing the laboratory has always been a basic and integral part in the manufacturer's scheme of operation. Its importance to manufacturing needs little elaboration for laboratory testing has long since been recognized as one of the mainstays of sound business practice.

In a very broad sense five aspects of testing are recognizable at the manufacturing level: (1) raw materials testing; (2) quality control testing; (3) testing of new products; (4) basic research; and (5) fabric development testing.

Yarn testing apparatus

Austin S. Narcross. U. S. P. 2,632,325 (March 24, 1953).

A testing device for yarn comprises two sets of rolls to grip a yarn wherein one set is movably mounted and restraining means for holding the movably mounted set against yarn tension force and for operating tension measuring means.

TEXTILE MILLS H

A new approach to absenteeism

Verne Bobbit. *Tex. Ind. 117,* 119, 120 (April 1953).

Article describes some of the approaches to correcting absenteeism, such as emphasizing benefits of full time to worker, and recognizing improvement in attendance.

American Enka to make nylon yarn in new plant

Anon. *Tex. Age 17,* 41 (March, 1953).

American Enka Corporation has signed an agreement with the DuPont Company licensing Enka to produce Nylon under DuPont patents, and construction of a plant at Enka, N. C., will be started immediately. Although American Enka will be licensed under DuPont patents, it will utilize technical know-how and experience of its Dutch affiliate, Algemene Kunstzijde Unie, N. V. of Arnhem, Holland. Initial production is expected to be about 2 million pounds of staple a year. Chemstrand Corp. is now completing a plant at Pensacola, Fla., to produce nylon under the DuPont patents.

Anti-stick "Teflon" seen cutting clean-up costs in textile mills

Anon. *Tex. Age 17,* 74 (March, 1953).

DuPont Co. reports that "Teflon" polytetrafluoroethylene finish is finding increasing use in the textile industry as a coating on machinery parts, chiefly because practically nothing will stick to it. Most extensive use to date has been on slasher cylinders. Teflon is resistant to chemicals, has a low coefficient of friction, and can be used safely up to 480 degrees F. There is no known solvent for Teflon.

At Linen Thread Company—management safety committee coordinates activities

Anon. *Textile World 103,* 94-95 (March, 1953).

See front section.

At Russell Manufacturing Company—each supervisor handles safety his own way

Anon. *Textile World 103,* 92 (March, 1953).

See front section.

At Tallassee Mills—two-man department controls safety program

Anon. *Textile World 103,* 93-94 (March, 1953).

See front section.

Caustic waste liquor disposal

Wm. R. Steele and John V. McMahon (Allied Chemical and Dye Corp.); U. S. P. 2,632,732 (March 24, 1953).

A process for treating waste liquor from textile treatment containing caustic organic matter and having a phenolic odor comprises adding 5 to 40 pounds carbon dioxide thereto and subsequently adding chlorine to destroy the odor.

Changes in work loads

Anon. *Amer. Tex. Reporter 67,* 36, 40 (Feb-12, 1953).

Article states that the differences in outlook of the Eastern mill worker and the Southern mill worker is one basis for lower production cost in the South. The community spirit, interest in quality and amount of production, and personal pride in operations contribute to the higher production and better quality goods of the southern employees.

Clean up with clean bobbins!

J. T. Fasnacht. *Tex. Ind. 117,* 121-123 (April, 1953).

Article describes the practical approach of one mill to the problem of soiled filling. Some of the steps were to clean up winders, transport filling on pin board, clean drop boxes at loom, and use a bobbin cleaning machine made by Glenwood Machinery Associates. Machine will clean 30 bobbins per minute and cost of operation is reasonable.

Courtaulds new rayon plant starts production of staple

Anon. *Tex. Age 17,* 19 (March, 1953).

Courtaulds, Inc., has started production of rayon staple with the initial output of 1½ and 3 denier at its Lemoyne, Ala., plant, 20 miles north of Mobile. The opening of this plant marks the re-entrance of Courtaulds into American rayon manufacture after a lapse of 12 years. The company also has affiliates in Canada, France, Germany and Italy.

Here are some findings that prove research and quality control pay off highlights

M. Earl Heard. *Textile Industries 113,* 97-100 (March, 1953).

See front section

How to use the replacement formula

Anon. *America's Textile Reporter 67,* 12-14 (March 12, 1953).

See front section

Manufacturing shares

Anon. *Amer. Tex. Reporter 67,* 21-26 (February 12, 1953).

Article is a summary of the financial activities

of a number of textile companies up to February 6, 1953. Financial news about Goodall-Sanford, Robbins Mills, Saco-Lowell, Graniteville Co., and Phillips-Jones Corp. is included, as well as the weekly range of 26 Textile stocks.

Mechanical coal handling system at finishing plant

W. H. Fisher. *Tex. Age 17,* 56-57 (March, 1953).

Article is a description of the completely mechanical coal-handling installation at Kerr Bleaching and Finishing Works at Concord, N. C. An ingenious system of silo storage, conveyors, and electrical controls have effected substantial saving in labor, time and adequate steam supply.

Molded nylon parts prove servicable in textile machinery applications

Anon. *Tex. Age 17,* 68-70 (March, 1953).

Successful application of molded nylon to such parts as bearings, thread guides, etc., for textile processing machinery leads to the conclusion that there is a tremendous potential for further application of molded nylon. Some of the properties which make nylon outstanding are:)1 nylon can be used as bearing material which does not have to be lubricated, 2) Resistance to permanent deformation, 3) light weight, 4) heat resistance, 5) resiliency, and 6) toughness and abrasion resistance.

Proper operator judgment cuts cost of fork truck operations

O. T. Tenkle, Jr. *Tex. Age 17,* 71 (March, 1953).

Operator judgment becomes as important to a good job of material handling with a fork truck as truck design, material and workmanship when it is remembered that tons of material, possessing an enormous amount of kinetic energy are being handled whenever the fork truck is in operation. General rules for keeping operating and maintenance costs to a minimum are a) proper use of equipment, b) proper loading of equipment, c) proper movement of loads, and d) general safety precautions.

Saco-Lowell Bulletin now 25 years old

Anon. *Tex. Age 17,* 19 (March, 1953).

In 1928, management at Saco-Lowell decided that a House Organ would be the best method of keeping prospective users of their equipment informed about design, construction and operation of those machines. The Saco-Lowell Bulletin, first published in March, 1928, has been "Issued monthly in the interest of efficient mill operation" since that time.

Tennessee Eastmen Company

Anon. *Tex. Age 17,* 20-25 (March, 1953).

Article relates a brief history of the Tennessee Eastman Company, and tells about the evolution of Teca, Estron and Chromspun fibers. A list of the available filaments and fibers is given.

Textile shares

Anon. *Amer. Tex. Reporter 67,* front cover, 37-40 (February 12, 1953).

Article tells about the stock of some of the well known textile companies, and expresses the belief that a more wide listing of textile stocks would be beneficial to the industry.

The philosophy of taxes

Ringgold Arden. *Tex. Ind. 117,* 175, 177-78 (April, 1953).

Article discusses the philosophy of taxes, and states that most taxes are outgrowth of socialistic or communistic proposals. The graduated income tax, inheritance tax, gift tax and estate taxes are included in the discussion.

Treatment of water for textile processing plant

F. H. Slade, A. M. I., Mech. E. *Textile Manufacturer 78* (February, 1952).

The first part of this article (Dec. p. 607) was concerned with purification, chemical feeders and filters, and the second (Jan. p. 3) with automatic control, water softening, lime-soda plant and chemical measurement. It concludes with the requirements for boiler feed purposes, also base-exchange plant and ion-exchange equipment.

"Our mill checks oilers every day"

Ramon Parks. *Tex. Ind. 117,* 124-25 (April, 1953).

Article tells how lubrication schedule is checked daily by supervisors and includes daily check lists to be used by oilers for each day of the week.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Acrylonitrile polymers

John R. Caldwell (Eastman Kodak Co.); U. S. P. 2,632,748 (March 24, 1953).

Fiber forming composite resinous compositions are formed by dissolving acrylonitrile polymer and a resinous polyamine containing amide groups in a solution such as dimethyl formamide.

Degradation of cellulose during mechanical

processing. III

John C. Whitewell and Robert F. Schwenker, Jr. *Textile Res. J. 23,* 175-85 (March, 1953).

Experimental results and methods of calculation used in investigating the hypothesis of degradation during mechanical processing are reexamined. New data on a cotton whose processing was entirely standard are reported. An analysis of viscometric measurements, calculations and methods of comparison is included. Methods of another laboratory where this same problem has been investigated are compared.

Fiber forming solutions of acrylonitrile polymers

John J. Justice (The Chemstrand Corp.); U. S. P. 2,632,750 (March 24, 1953).

Fiber forming solutions of acrylonitrile polymers contain an alkali or alkaline earth metal salt to lower the viscosity and increase the fluidity of the polymer solution.

Fiber producing acrylonitrile polymers

Hermon A. Brusoon (Industrial Rayon Corp.); U. S. P. 2,631,995 (March 17, 1953).

To improve the dyeing properties of acrylonitrile polymers, the polymers are made by copolymerizing acrylonitrile polymers, the polymers are made by copolymerizing acrylonitrile with certain amino-allulic ethers or salts thereof.

Fragmentation of textile fibers

D. G. Drummond. *J. Textile Inst. Trans. 44,* T53-58 (April 10, 1953).

Electron microscope pictures are presented of the products of wet disintegration of various textile fibers in a Waring Blender. The absence of clear-cut fibrils in the product from cuprammonium rayon is of particular interest. Dry abrasion of cotton fibers, and the use of a thermal precipitator to collect the resulting air-borne detritus at successive stages, permits of the examination of isolated particles and avoids the reimpaction which frequently occurs in dry grinding methods. Particles resulting from a mild acid treatment of cotton are also shown. A tentative explanation is given of the relation of the observed particles to known structures in the cotton hair.

Influence of water hardness on the forming of surfactants

F. Kroemer and G. Ehrhard. *Melliand Textilber. 34,* 127-29 (February, 1953); *in German.*

The influence which water hardness, the concentration of hydrogen ions and especially phosphate additions, exert on the foaming of substances with surface activity is discussed by the author in a simple and clear manner on the basis of experiments. The results obtained are useful for the expert.

Polymerization

C. H. Bamford and A. D. Jenkins. *Proc. of the Royal Soc. 216,* 515-39 (February 24, 1953).

A kinetic study of the polymerization of acrylonitrile has been made. During polymerization of the pure monomer the polymer is precipitated. The reaction shows kinetic features which are different from those of homogeneous vinyl polymerizations. It is shown that observations can be interpreted on assumption that the propagating free radicals become occluded in polymer aggregates during polymerization. This occlusion may affect all the rate coefficients; while the effect of mild degrees of occlusion is chiefly to reduce the termination coefficient, severe occlusion can prevent both termination and propagation. The factors influencing the degree of occlusion are discussed.

Soil-fiber complexes

W. J. Hart and Jack Compton. *Textile Res. J. 23,* 164-8 (March, 1953).

Soil-fiber complexes with greasefree carbon blacks have been studied for a series of textile fibers. The marked variation of the percentage distribution of total surface occupied by crevices of varying diameter has been shown to exist. The rate of primary disposition of soil and the suspending power of different surfactants for a given soil were shown to vary widely for the different fibers. Each of the complexes studied appears to be micro-occlusive in nature and shows a zero temp. coefficient of stability. The application of a small quantity of energy in the form of mechanical agitation resulted in a relatively large decrease in soil retention by the fiber, whereas a large quantity of energy had little or no effect.

Viscometric studies of cellulose in cotton in relation to mechanical processing

Carl M. Conrad and Ralph A. Rusca. *Textile Res. J. 23,* 168-74 (April 10, 1953).

A study was undertaken to determine whether or not the mechanical processing of cotton fibers into yarn causes any chemical degradation to the cellulose. The viscosity measurements determined by the methods employed at the Southern Regional Rsearch Laboratory failed to show any demonstrable chemical damage to the cellulose which could be associated with processing. When

the new methods described by Krieble and Whitwell was applied to the viscosity data, the linear plots depended upon for extrapolation could not be obtained.

TEXTILE EDUCATION AND RESEARCH J

Gordon research conferences—1953

Anon. *Chem. and Eng. News 31*, 1562-4, 1566-8, 1601 (April 13, 1953).

The program for the 1953 Gordon Research Conferences is presented. The conferences will be held June 15-September 4 at th Colby Junior Collge, New London, N. H., and at the New Hampton School, New Hampton, N. H. The Polymer Conference will be July 6-10; Textiles, July 13-17; Elastomers, August 3-7; Ion Exchange, June 15-19; Statistics in Chemistry, July 27-31; Analytical Chemistry, August 10-14; Organic Coatings, August 17-21.

Let's bring government back home

Allan Shivers. *Tex. Ind. 117*, 156-58 (April, 1953).

Article opposes the continued expansion of centralized government and recommends the return of sovereignty to the states, to make certain that the individual, social, and economic freedoms guaranteed us by the Constitution are preserved.

The 1953 cotton research clinic

Anon. *Textile Bulletin 79*, 57-67 (March, 1953).

Graphic evidence that those who work with cotton in the textile industry can avail themselves, day by day, of much spade-work which

furthers the natural advantages of the fiber and allows for less costly and more precise processing, was presented February 18-20 during the 1953 Cotton Research Clinic at Savannah, Ga.

Papers presented at the clinic included:

"How Cotton Fiber Properties Affect Yarn Behavior"—by Helmut Wakeham

"Fiber Strength And Extensibility As Measured By The Stelometer"—by K. L. Hertel

Effect Of Gauge Length In Fiber Strength Tests On Correlation With Yarn Strengths"—by Hugh M. Brown

"The New Concept In Opening And Picking"—by Robert M. Jones and Robert S. Curley

"The Shirley Opener"—by Geoffrey Dakin

"A New Roving Twist Formula"—by James R. Corley

"Correlation Of Gauge Length With Fiber And Yarn Strength"—by George W. Pfeiffenberger

"Lint Cleaning By Air"—by A. L. Vandergriff

"Some Aspects Of The Engineering Design Of Textiles"—by Walter J. Hamburger

"Opening And Cleaning Cotton By Means Of Electrostatic Electricity"—by Hugh M. Brown

"The Opening And Blending Of Cotton And Other Fibers"—by William A. Hunter

"Mill Experience With Speeded-Up Carding"—by William A. Newell

"Some Fundamentals In Opening And Picking Research"—by Peter M. Strang

"The Effects Of Storage And Gin Drying Temperature On The Spinning Quality Of 'Green' New-Crop Cotton"—by Jack Compton

"Progress Report On Cleaning Research At S.R.R.L."—by Ralph A. Rusca

Index to Authors

VOLUME 10, NUMBER 5, MAY 1953

	Column No.		Column No.		Column No.		Column No.
Alford, Mailland W.	1248	Finlason, Donald	1248	Mainkur, C. F.	1253	Schmild, Arnold W.	1250
Bamford, C. H.	1265	Fisher, W. H.	1262	Malik, J. P.	1250	Schmitz, W. R., Jr.	1244
Beckwith, O. P.	1258	Forzley, Victor G.	1247	Margolin, I. S.	1254	Schwenker, R. F.	1264
Berkley, Earl E.	1257	Gasser, A.	1246	Marsden, H.	1247	Schivers, Allan	1266
Bley, Rudolph S.	1247	Gentle, A. H.	1255	Mayne, S. C., Jr.	1257	Sisson, W. A.	1243
Bobbit, Verne	1260	Grodzinski, P.	1258	McComb, Jim	1243	Slade, F. H.	1263
Boese, Alvin W.	1249	Hannel, J. W.	1257	McMahon, J. V.	1260	Slevereynck, B.	1254
Brusoon, Hermon A.	1264	Hargreaves, T.	1249	Moisson, G. M.	1253	Sonnino, Mario	1247
Caldwell, Albert E.	1250	Hart, W. J.	1265	Morehead, F. F.	1243	Steel, W. R.	1260
Caldwell, John R.	1263	Heard, Earl M.	1261	Mullen, E. P.	1255	Stone, F. O.	1252
Chase, Wm. G.	1257	Highberger, J. H.	1243	Marcross, A. S.	1259	Swanson, J. M.	1257
Compton, Jack	1265	Jackson, T.	1255	Neisler, C. E., Jr.	1250	Tata, R. V.	1247
Conrad, Carl M.	1265	Jacobs, Fred F.	1252	Nessing, Benjamin	1249	Tenkle, O. T., Jr.	1262
Conwell, J. W.	1251	Jenkins, A. D.	1265	Parks, Ramon	1263	te Starke, L.	1245
D'Alessandro, P. L.	1259	Justice, John J.	1264	Pero, H. L.	1248	Tucker, R. J.	1247
de Brabander, Camiel	1244	Keight, A. W.	1247	Purse, J. H.	1248	Ulrich, Graf.	1258
Drummond, D. G.	1264	King, J. C.	1254	Rankin, W. W.	1248	Walker, R. J.	1246
Ehrhard, G.	1264	Kleiorert, Theodor	1254	Reider, M. J.	1243	Waugh, D. L.	1245
Eisele, J.	1251	Kroemer, F.	1264	Ringgold, Arden	1263	Whitewell, J. C.	1264
Fasnacht, J. T.	1261	Landott, Albert	1255	Rusca, R. A.	1265	Wicker, D. B.	1244
Federkiel, W.	1251	Little, Jim N.	1257	Schlums, O. W.	1245	Williams, K. R.	1257
						Winston, T. B.	1245

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German patent applications and other reports listed by PB report number may be obtained in microfilm or photostat from the Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

Canadian patents may be obtained from the Commissioner of Patents, Ottawa, Canada. Printed copies of Canadian patents issued since January 1, 1949, are now available and may be purchased at 25¢ for a copy of less than 50 sheets of printed matter. For patents of over 50 sheets the price is $1.00 a copy.

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6

Textile Highlights of the Month

Textile Reader's Digest

DOUBLE-TRUMPET SPINNING AND ITS EFFECT ON YARN STRENGTH

The strength of a fibrous yarn is dependent, among other things, on the position of the fibers in the yarn. For a yarn to have strength, the fibers must be intwined, lying partially on the surface and partially within the yarn. There is probably an ideal way in which the fibers could be arranged in a yarn to give maximum strength for a given set of properties such as fiber strength, length, fineness, crimp, etc. It is not possible on existing spinning equipment to effect this ideal arrangement.

As the fibers leave the front rolls of the spinning frame, they are in the form of a thin, narrow ribbon. When the twist is applied, this ribbon collapses and the pressure generated by the twist causes the fibers to change position or migrate and to assume some unpredictable location in the twisted yarn. Some of the fibers will have most of their length on the surface of the yarn and thus contribute relatively little to yarn strength. Other fibers are under excess tension caused by the twisting of the ribbon and will break before the yarn reaches maximum strength. Also the twist rate will vary along the yarn according to yarn uniformity. These conditions reduce the maximum breaking strength.

If the fibers could be arranged so that each could contribute its full value to yarn strength, and the twist distribution could be improved, the maximum breaking strength could be increased appreciably. It is believed that a better arrangemen of the fibers and twist distribution is obtained when yarns are spun by a double trumpet method being studied at this laboratory.

Conclusions. The data presented show that the maximum yarn strength obtainable by conventional spinning can be increased by using the double trumpet method. With a twist multiplier of 3.0 and up in medium length cottons and a roving spacing of 6 millimeters, no difficulty was experienced in the spinning process, including piecing up ends with the frame running. In the finer counts of yarn made from either medium or long cotton, better results could possibly be obtained by using slower spindle speeds, lighter travelers, and roving spaces of about 3 millimeters.

The major usefulness of the process in industry seems to be in the spinning of yarns near the high side of the twist multiplier range. It is here that yarn strength is greatly increased over yarn spun by conventional methods. In evaluating new varieties of cotton for spinning qualities at this laboratory, the flatness of the twist-strength curves produced by the double trumpet method of spinning is important.

When yarns are spun for maximum strength in the routine testing program, only one twist multiplier is used. At the present. this twist multiplier is based on fiber length alone. Since it has been shown recently that fineness plays an important part in determining the twist multiplier for maximum strength it is evident that errors occur when selections are made on fiber length only, or if fiber length has not been accurately determined. The flatness or the twist-strength curves of yarn spun by the double trumpet method indicates that the new method will reduce the magnitude of these errors. *Textile Industries,* June, 1953.

WE INCREASED BOBBIN WEIGHT BY 20 PERCENT IN WARP SPINNING

A few simple changes, plus the discarding of some old ideas, have enabled us to increase the weight of our warp bobbins by 20%. We now get 0.52 lb. of 15s warp yarn, a 50-50 rayon-acetate blend, on a 10-in. bobbin with a 2½-in. ring. We formerly got 0.42 lb. per bobbin.

All we did was install a production builder, reverse the builder cam, increase lays per inch, and make the mechanical adjustments necessary for the changes.

We estimate that it takes only about 30 min. between doffs to make the necessary changes, and five doffs are usually enough. That means only about 2½ hr. of an overhauler's time. And the results from one frame can be applied to all other similar frames in about 30 min. per frame. The savings in doffing costs, spooler operation, and improved yarn quality are evident and well worth the small investment in labor.

Why We Reversed Our Builder Cam

The old rule-of-thumb method is to have the laying-on stroke going up and the tying-on stroke coming down, but the more we thought about it the more we found wrong with that method.

When the ring rail comes down fast, you're moving away from the source of supply faster and using up traveler lag to let you move away. The greatest tension made on the yarn by the traveler

occurs when the ring rail is at the top; so moving away from the source of supply quickly can break an end that ordinarily wouldn't come down.

We reversed our builder cam so that the laying on stroke is on the way down and the tying-on stroke is on the way up. This change caused some sloughing in spooling; so we decided to increase lays per inch.

Increasing Lays per Inch Stopped Spooler Sloughing

Our old lay gear was giving us 1/64 to 1/16 in. between lays on the laying-on stroke. We changed our lay gear from a 40 to a 25, shortened the stroke, and increased picks to fill the bobbin.

This change increased bobbin weight 3% and reduced sloughing somewhat, but we were still not satisfied.

So we dropped one tooth at a time on the lay gear until we were down to 22-tooth gear. By this time our sloughing problem had been eliminated and the air space between lays was practically nil. Our lays were so close that we couldn't see the bobbin after the first laying-on stroke. The yarn was practically overlapping at the grooves on the bobbin.

Other Minor Adjustments Completed the Job

Knowing that we had reached our goal on lays per inch, we then adjusted our stroke, chain length from pully to cam follower, and picks to give us the desired build. Since the builder cam had been reversed and the ring rail was moving off the bobbin former more quickly, we were able to have a more rounded bottom on the bobbin than we had before. The increased lays per inch also made the bottom of the bobbin larger and prevented rolling of the yarn because the yarn was packed more tightly.

By trial and error we determined picks and the proper chain length from the pulley to give us the desired taper and stroke. We increased our bobbin weight several times during the experiments by just changing the lay gear and not the stroke or picks.

System Was Then Applied To Other Yarn Numbers

Using the lay gear we found suitable for 15s as a basis, we then determined by ratio and proportion lay gears for yarn numbers from 5s to 30s. Now we know the proper lay gear for any yarn number we can spin.

How To Apply These Ideas To Make Better Bobbins

It would be impossible to give enough specific information to apply to every mill, but if you follow this general outline you should come up with results similar to ours.

1. Determine your yarn diameter.
2. Determine your desired lays per inch by dividing average yarn diameter into 1.
3. Measure your present lays per inch at the average thickness of the bobbin.
4. Use a ratio to find out what lay to use. (Present lay gear $\times$ unknown lay gear = Present lays per inch $\times$ desired lays per inch)

Since variations in yarn diameter are often 90 to 130% or even more, the above calculations may not give the right answer. The rest depends on your good judgment. Change the lay gear until you cannot see the bobbin after the first laying-on stroke. Then use ratio and proportion to figure the lay gears for other yarn numbers. *Textile World,* (May, 1953).

TEXTILE MACHINERY TRADE-IN VALUE SUGGESTED MAPI IMPROVEMENT

One of the principal bogeys in applying the MAPI replacement formula to textile machinery is assigning a terminal salvage or conversion in value to the proposed system. If it is expected that the challenger will have a significant salvage value at the end of its service life, this is bound to affect calculation of its adverse minimum and hence, should be estimated. The trouble is that these estimations frequently throw the MAPI calculations off considerably.

Estimations and guesswork should be minimized to the greatest possible degree, of course, and obviously should not have to play such an important part in calculation of the challenger's adverse minimum. The problem is that few can be very sure just what a new machine will be worth after, say 15 years, according to accepted practice.

However, it is evident that the textile machinery manufacturers could do a great deal to alleviate this troublesome question. But before developing this idea, let us look at the function of the terminal salvage or conversion value as detailed by the Machinery and Allied Products Institute, organization of the formula.

If the disposal of the challenger at the end of the primary service life is as scrap metal, or resale the estimated terminal salvage value is the amount of value which will remain in the challenger at that time. However, scrapping is not the only alternative for the challenger. It may be converted to secondary or stand-by service within the company. If this is the case, the value can-

not properly be below sale or above the cost of acquiring a comparable facility in the market.

It is advisable in MAPI calculation to assign a salvage value which is as low as possible, on the theory that the lower the value the less the calculation will be affected. Of course, if the mill is willing to assume that the machine will have no value at all at the end of its service life that would be ideal. At any rate, terminal salvage value should be no more than 10 per cent of the installed cost. Any higher figure is likely to affect the adverse minimum greatly.

In this connection, we naturally have received numerous comments and suggestions regarding the MAPI formula. One suggestion is so well thought out and appears to hold such great merit that we are using it as the focal point of this article. It concerns use of a guaranteed "turn-in" value to replace the estimation of terminal salvage or conversion value. Implementation of this idea would be extremely intricate in this industry; nevertheless, it is definitely worth consideration at this time.

This interesting suggestion holds that there is nothing inherent in MAPI formula stipulations which prevents use of a third value for intended disposal of the challenger after completion of its service time. The third value is guaranteed turn-in and this suggestion asks: Why can't the textile machinery manufacturers give the mill man a guaranteed amount against future reorders?

Such an arrangement would provide increased sales for the machinery interests, this source feels. He reported that it already has for a large business machinery manufacturer, whose system was described thusly:

The firm guarantees so much trade in value at the time of purchase in return for a certain specified amount of business. In other words, it guarantees $2000, say, as turn-in if the client agrees to provide $100,000 worth of business at the end of the primary service life of the machine.

Of course, the manufacturer must make clear that the machinery must be operated in the prescribed manner and with the proper calibre of help. But by this method this firm also guarantees that the client's cost of operating the new machine yearly will not exceed a certain figure.

This system of guaranteed turn-in has worked very successfully and has provided increased sales and profit for the business machinery manufacturer. What better argument is there for adoption of the plan by textile machinery firms? The actual monetary cost of entering into such an agreement can either be written off by drawing the sum from capital reserve or can be written off

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in the year when the next exchange of machinery takes place. This, however, entails an accounting notation at the time of the agreement that this cost will become outstanding at the future date.

If mill men were guaranteed a definite turn-in value, one of the most difficult estimations in the MAPI calculations would be eliminated. Instead of a combination of theory and practicability we would have a dollars-and-cents formula producing definite, fast figures. Then the mill man would be shown:

1. What the machine will cost installed.
2. What it will be worth in fifteen years as trade-in value.
3. What his increased production will be.
4. What his actual pay roll saving will be.

America's Textile Reporter, (May 28, 1953).

OSAGE'S QUICK-STOPPING WARPER

Osage Manufacturing Co., a subsidiary of Reeves Bros., Inc., located in Bessemer City, N. C., has had one of Cocker Machine & Foundry Company's new, Model SD-49, spindle-driven warpers in operation for over a year. Alongside the new warper is an older model, and this circumstance makes it convenient to compare the performance of the two in this particular mill.

Textile Power

and

Steam Plants

A Record of Service As Measured By:

Number of Engagements	over 1,000
Number of New Plants	over 300
Number of Major Additions	over 200
Minor Additions, Appraisals, Studies and Reports	over 500

Locations: in every state where textile plants are located; numerous foreign countries.

Cost of new plants and major additions over $75,000,000

Lockwood Greene Engineers, Inc.

Architects • Engineers

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Osage is engaged in spinning synthetics and synthetic blends and in weaving these yarns, along with some filament yarns, into plain and fancy suitings of high quality. The two warpers are used for warping spun yarns, but some filament yarns are also run on them. Both warpers are operated at about 450 yards per minute on spun synthetic yarns and at about 260 yards per minute on filament. However, the new warper has a speed indicator built into it, and the old one does not, so the speed of the old one is not as accurately known.

The new warper is designed to carry a beam with a larger head. The head is 36 in. in diameter as compared to 28 in. for the old beams, and about 25,000 yards of a 400-end, 24's 2-ply warp can be wound on each of the beams. This increased beam capacity reduces the operator's work because doffing is less frequent. However, the new warper will also accommodate 28-in. beams.

Magnetic Brakes. The new machine uses magnetic brakes as designed and built by Warner Electric Brake & Clutch Co. The adoption of these brakes is one of the major features of the new warper. The brakes are used, one on the delivery roll, one on the jack shaft. The brakes are synchronized so that they act together.

Action of the brakes is very quick and is such that the braking is gradual, and there is no slippage of the warp over the presser roll. At Osage, the overseer of preparation demonstrated how quickly he could stop the new warper; and at full speed, the warper was stopped in less than one revolution. The old model turned between two and three times before coming to a complete stop. The new warper has never given any trouble by slipping, despite the quick brake action.

The quick stop is an obvious advantage to the operator. Ends do not get lost, and tying-in is much faster.

Creel. The creel used with the new warper also offers advantages, particularly in setting up mixed designs. The creel is straight instead of a staggered design, and the operators require less time to thread mixed warps. Also, the new warper threads through an eye board and one comb instead of threading through a double comb, and this makes it easier to thread.

Maintenance. There has been very little maintenance required on the new warper, the only trouble so far encountered being some damage to the ends of the presser roll as the result of incorrect loading of empty beams by inexperienced

operators. Aluminum bands about an inch and a half wide have now been strapped around each end of the presser roll, and the bands have helped reduce damage from this cause. Also, new operators are shown how to avoid hitting the presser roll with the beam flange in loading.

Time Saver. The overseer of preparation stated that the new warper is the equivalent of the old type plus an extra operator. In other words, creeling, piecing-up, and doffing now require only about half as much time. *Textile Industries,* print (May, 1953).

HOW TO GET THE MOST FROM A SMALL-PLANT MAINTENANCE CREW

The maintenance operations of small plants are more difficult than the operations of a large plant because the same problems must be solved by both, and maintenance supervisors in small plants seldom have a staff of experts and specialists to advise them.

The maintenance supervisor of small plants must be intimately familiar with all the physical assets of his plant, all the manufacturing processes, and all the services he must provide to keep all the departments of the organization working at peak production.

Employ Specialized Knowledge

Since the jobs he must do are widely diversified and since he cannot become a specialist in every field of his work, the maintenance supervisor of a small plant must employ specialized knowledge from a broad field of engineering if he is to successfully direct his maintenance operations. How can he employ specialized knowledge?

1. A small crew must use outside services. One of the most direct methods is to use the services provided by the manufacturers of machinery or equipment. More and more the salesman who visits a plant is an experienced engineer who knows his product completely and is willing to assist with its selection, utilization, and maintenance. His company can usually supply technical information and assistance without cost.

2. A file of technical information is a great aid to maintenance men. Technical books and articles in maintenance periodicals are an excellent source of information. Articles with potential value that cannot be read immediately should be filed for future reference.

3. Plant-engineering clubs should be organized in your locality. The personal interchange of ideas is always valuable to maintenance supervisors because the benefit of collective thinking can be gained.

Another advantage of club organizations is that they encourage visits to other plants. Visits to larger plants are always advantageous because their greater experimental possibilities usually result in the most up-to-date maintenance methods.

4. Hire consulting experts such as heating engineers or laboratory testing organizations, when necessary. Use them as much as they're needed—but don't sit back and relax while they do your thinking; there's danger in that practice.

Use Sound Judgment

Books on maintenance subjects often have general applications. Maintenance periodicals often describe a specific method used in another plant and may require modification to suit your conditions. The outside sales engineer is pushing his own product. The consulting expert does not know your plant as well as you do. For these reasons, you must rely on your own judgment and resourcefulness to adapt information from these various sources to your own operation.

A good maintenance supervisor must:

1. Interpret what he reads to make it fit his requirements

2. Judge what he hears to determine its suitability to his needs

3. Guide the consulting expert to the correct analysis of his problem

To do these three things does not require a detailed and exact knowledge of all the engineering principles involved, but it does require a sound judgment and basic understanding of fundamental engineering principles and techniques. Such ability, combined with the "special" staff of experts, will result in the operation of a maintenance department with efficiency and relative ease.

Use Production Workers

It's difficult to find a suitable maintenance worker for a small plant because he must do so many types of work. For example, one mechanic often has to be familiar with all the types of machinery in his plant and, in addition, be a welder, painter, and carpenter.

Since much of this work can be planned, it can be assigned to regular mill-production workers. They can do the work under the supervision of the maintenance department during slight lulls in their production schedules, which may range from only an hour to one or two days. In this way, the skill of a specialist is employed where normally a general-maintenance worker has to be used. *Textile World,* (May 1953).

BATTERY-OPERATED ROLL CLEANER

A mobile battery-operated cleaning machine clears waste from drafting rolls and other parts on ring frames, fly frames, and combers.

The device is mounted on a trolley and can be wheeled from station to station in the processing room. As it is completely self-contained, there are no trailing wires to hinder its movement.

The tapered rotating spindle is provided with a hand-grip for the operator, and on being directed to the waste it immediately picks up the fibers and enables the operative to reach places which would otherwise be inaccessible or which would be dangerous while the machine is in motion.

On the comber the device can be used for removing waste at the detaching roll ends and at the rear of the comber at the brush and cylinder position. On ring frames the cleaning spindle will speedily remove all waste collections from roll and apron drafting systems, while on the fly frames it will clear waste collections on the bobbin and spindle gearing. *Textile Industries,* (June, 1953).

SPINDLE ADAPTER FEATURES TWO-STAGE CONVERSION

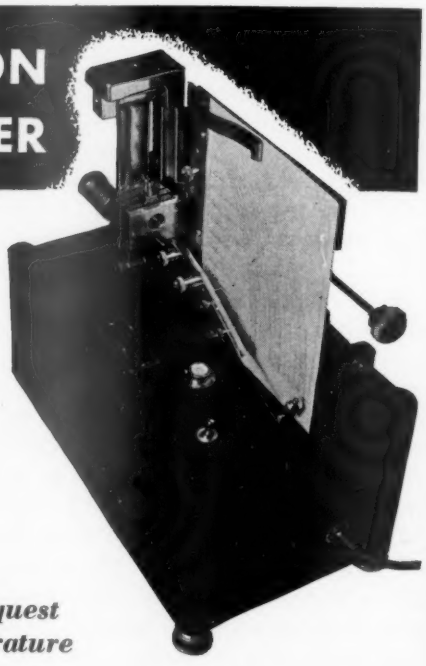
The benefits of unique, two-stage conversion are offered by the new Hartford Spindle Adaptor for paper or plastic tubes.

For the first stage this adaptor enables a mill to use existing spindle blades. Onto these are mounted the adaptor, consisting of a new chrome-plated steel whorl, which gives unusual protection at the major wear point and an aluminum barrel surmounted by a cap, or seat, of steel to retard wear at that point.

With the adaptor a mill can convert spinning, twisting or special duty spindles from wood-bobbin service to service with all types of paper or plastic tubes, regardless of the make of spindle now in use.

Because of the adaptor's design, plus its long-life construction, it is possible for a mill to make a second conversion at a later date. This feature prevents obsolescence. When the time comes that a mill wishes to improve its spindles further, the adaptors are returned to the Hartford Machine Screw Company, which removes the old blades and attaches either their ball bearing or roller bearing anti-friction running gear. This second adaption is very simple, because the whorl is so

Announcing SCOTT CLEMSON
FLAT BUNDLE FIBRE TESTER



An improved Tester that

makes use of established sample techniques and existing clamp equipment, but

adds these advantages:

(1) Applies constant rate of load to sample.

(2) Sample guage length may be varied from 0 to 10 mm.

(3) Motor driven, with control for either single tensile test or continuous hysteresis cycles.

(4) Breaking load and elongation are recorded instantly without lag.

(5) Produces a permanent record, reading directly in grams, useful for filing and reference.

Request Literature

Southern Service and Repair Facilities:
SCOTT TESTERS (Southern) INC. Spartanburg S. C.
Southern Sales Rep: JOHN KLINCK
304 West Forest Ave., Noorth Augusta, S. C.

SCOTT TESTERS, INC. 94 BLACKSTONE ST., PROVIDENCE 1, R. I.

designed that it also fits the Hartford anti-friction running gear. *Textile Industries*, (June, 1953).

LOOM CLOTH ROLL MECHANISM SAVES TIME AND LABOR

A recently patented method for holding and removing cloth rolls on looms eliminates the conventional train of gears, shaft and springs and, according to the inventor, saves time and labor in the cloth doffing operation.

The cloth roll rests in ball bearings mounted on rods actuated by either pneumatic or hydraulic cylinders. Cylinders on each side of the loom are connected by a single pipe-line so that pressure on both ends of the cloth roll will be the same, thereby preventing the production of slacksided cloth.

Cloth can be removed from the loom in about one-half the time required with conventional arrangements. *Textile Industries*, (June, 1953).